Remarks:

Applicants appreciatively acknowledge the Examiner's confirmation of receipt of Applicants' claim for priority and certified priority document under 35 U.S.C. § 119(a)-(d).

Reconsideration of the application is respectfully requested.

Claims 1 - 9 are presently pending in the application. Claims 3 and 8 have been amended. As it is believed that the claims were patentable over the cited art in their original form, the claims have not been amended to overcome the references.

On page 2 of the above-identified Office Action, claim 8 was objected to on the basis of an alleged informality. However, Applicants' respectfully disagree with the suggestion made with regard to claim 8. More particularly, Applicants' note that it is a special advantage of the present invention that an unwanted mirror frequency that may be generated by the mixer is far enough above the transmit frequency level. Applicants' architecture has the special advantage that a conventional amplifier or buffer can be used, which inherently has damping properties with respect to high frequencies that may occur from the mirror frequency. The damping properties of a conventional amplifier or buffer, when used in Applicants' claimed invention, may be sufficient to cancel or dampen the mirror frequency without using an explicit filter,

keeping in mind that a conventional filter would use more space and effort in an integrated circuit at those frequency levels compared to the use of a conventional buffer or amplifier, as claimed in claim 8. As such, Applicants have amended claim 8, herein, to recite an "amplifier including inherent filter properties". The amendment to claim 8 is supported by the specification of the instant application, for example, on page 8 of the instant application, lines 4 - 7, which state:

> In accordance with an added feature of the invention, there is provided **an amplifier** is [sic] connected **for rejecting the image frequency obtained by adding the two frequencies present on the input side.** [emphasis added by Applicants]

It is believed that the above amendment to claim 8 addresses the concern raised on page 2 of the Office Action.

On page 3 of the Office Action, claims 1, 3, 4 and 7 - 9 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over U. S. Patent No. 6,782,249 to Feldman ("**FELDMAN**") in view of U. S. Patent No. 6,850,121 to Detering et al ("**DETERING**"). On page 6 of the Office Action, claims 2, 5 and 6 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over **FELDMAN** and **DETERING**, and further in view of U. S. Patent No. 6,574,462 to Strange ("**STRANGE**").

Applicants respectfully traverse the above rejections.

More particularly, Applicants' claims 1 and 3 recite, a circuit configuration for the frequency conversion of an oscillator frequency into a carrier frequency, including, among other limitations:

> **said frequency divider providing an output signal** at said output side **having a quarter of a frequency of an oscillator signal** present at said input side. [emphasis added by Applicants]

The above limitations of Applicants' claims are neither taught, nor suggested, by the prior art references.

More particularly, the **FELDMAN** reference discloses quadrature signal generation in an integrated direct conversion radio receiver. As shown in connection with Fig. 3 of **FELDMAN**, the circuit branch including VCO 308, buffer output 330, mixer 326 and divider 306, is used to provide a carrier frequency signal for the up-conversion of a signal to be transmitted. See also, col. 2 of **FELDMAN**, lines 37 - 41.

However, as implied on page 4 of the Office Action, **FELDMAN** fails to teach or suggest, among other limitations of Applicants' claims, a divide-by-n division circuit **wherein n is four**, so that an output signal provided by the frequency

divider has a quarter of a frequency of the oscillator signal present at its input side.

Rather, the Office Action points to **DETERING** as allegedly disclosing a divide-by-n division circuit with n being four. More particularly, page 4 of the Office Action stated, in part:

> Detering teaches a transmit frequency generator comprising a controllable VCO, mixer and divide by N division circuit where the mixer outputs the desired transmit frequency based on the sum of the output signal from the VCO and a the [sic] output signal of the VCO divided by N, figure 5, column 2, line 50 of column 3, line 19. Detering further teaches the factor N of the divider supplies a multiple of the number 2 and supplies two output signals which are phase shifted for application in an image reject mixer, figures 5-7, column 3, lines 16 - 19, and column 5, lines 7 to column 6, line 21.
>
> Since Feldman teaches the N of the divide by N division circuits may be a larger integer, column 2, lines 54 - 67, it would have been obvious to one of ordinary skill in the art at the time of the invention to realize the divide by N circuit of Feldman value of N that is a multiple of 2 such as 4 as suggested by Detering such that a nonintegral relationship results between the transmit frequency and the oscillator frequency to provide a good degree of immunity to effects.

Applicants' respectfully disagree with the statement in the Office Action alleging that the invention of Applicants' independent claims 1 and 3 would be obvious over **FELDMAN** and **DETERING**.

First, upon reading the **FELDMAN** and **DETERING** references, a person of ordinary skill in the art would not be **motivated** to combine the references in the manner suggested in the Office Action. **Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art.** The **FELDMAN** and **DETERING** references lack sufficient motivation for a person of ordinary skill in the art, reading the two references, to alter **FELDMAN** by providing a different N value, as suggested in **DETERING**. Rather, a person of ordinary skill in the art, would immediately recognize the completely different architectures taught in **FELDMAN** and **DETERING**, and would not combine them. This is because the **FELDMAN** and **DETERING** references relate to completely different subject matters. While **FELDMAN** discloses a circuit arrangement for providing a carrier frequency which can be used for up-conversion of a signal to be transmitted by using a mixer or converter (120 of Figure 1 of **FELDMAN**), **DETERING** discloses **the transmit arrangement, itself.** See, for example, the Abstract of **DETERING**. As shown in connection with Fig. 5 of **DETERING**, in **DETERING**, the signal path including oscillator 2, mixer 32 and bandpass filter 33 is the transmit signal path of the **DETERING** transmitter. However,

the transmit path of **FELDMAN** is shown in connection with Fig. 1 of **FELDMAN**, as including the encoder 116, modulator 118, mixer 120 and filter 122. The architecture of Figure 3 of **FELDMAN** provides a cosine carrier signal fed into mixer 120 of Figure 1.

In contrast to **FELDMAN**, **DETERING** discloses a modulated transmit signal being provided at the input 26 of Fig. 5 of **DETERING**, and then being fed into the PLL formed from the PLL 1, the summing node 18 and the oscillator 2 of **DETERING**. **In DETERING, the signal, which is already modulated, is frequency converted using mixer 32 and divider 19.** As such, a person of ordinary skill in the art, would immediately recognize the completely different architectures taught in **FELDMAN** and **DETERING**, and would not combine them, and, in fact, would be taught away from Applicants' claimed invention.

Further, even if a person skilled in the art would, arguendo, try to combine **FELDMAN** and **DETERING**, that person would, at most, **merely replace the oscillator 14 of Fig. 4 of DETERING by the arrangement shown in Fig. 3 of FELDMAN**, and thus not achieve Applicants' invention of claims 1 and 3. More particularly, if a person of ordinary skill in this art would try to follow the concept disclosed in connection with Fig. 5 of **DETERING**, **then there would be no possibility to use the**

teachings of FELDMAN, since Fig. 5 of **DETERING** and **FELDMAN** **disclose entirely different concepts**. Contrary to **FELDMAN**, **DETERLY** discloses the use of **direct modulation**, such that the **modulated** transmit signal, **at transmit frequency level**, is generated directly within the PLL circuit of **DETERING**. As such, contrary to Applicants' invention and **FELDMAN**, the generation of a conventional carrier frequency, as suggested in connection with Fig. 3 of **FELDMAN**, is neither necessary, nor possible, in the circuit of Fig. 5 of **DETERING**.

Further, the divider 19 in **DETERING** is used to divide-down a signal **which is already modulated** with useful data, for example using a frequency shift keying (FSK) modulation. In contrast to this, the divider 324 of **FELDMAN** is used to divide down an **unmodulated and harmonic signal**, for example a cosine signal. This kind of signal is sometimes referred to as carrier signal or local oscillator signal.

It would be clear to a person skilled in the art that completely different requirements apply for the two different frequency divider types of **FELDMAN** and **DETERING**. Therefore, even if **DETERING** would suggest a divide by four frequency divider, the person skilled in the art would have no motivation to introduce such a divide by four divider into the completely different structure having a different purpose of

FELDMAN.

It should be additionally noted, however, that both **FELDMAN** and **DETERING** are completely silent on the feature of a divide by **four** divider.

In view of the foregoing, it can be seen that the invention of Applicants' independent claims 1 and 3 would not be obvious over **FELDMAN** and **DETERING**, taken alone, or in combination.

Additionally, Applicants' claim 3 additionally recites, among other limitations:

> **said second signal path containing a low-pass filter.** [emphasis added by Applicants]

However, neither **FELDMAN**, nor **DETERING** teach or suggest a second signal path containing a low-pass filter, as recited in Applicants' independent claim 3.

With regard to the above limitation of claim 3, the page 4 of the Office Action stated:

> As to claim 3, with respect to claim 1, Detering of Feldman [sic] modified teaches the second signal path contains a low-pass filter (figures 5 and 6 a filter not shown, column 5, lines 49 - 56, a (low pass) filter element for suppressing harmonics of the divided signal used downstream of the divider (19)).

Applicants' respectfully traverse the rejection of claim 3, based on the combination of **DETERING** and **FELDMAN**. More particularly, the second path of **FELDMAN** does not include a low pass filter. Rather, **FELDMAN** is silent on the feature of a low pass filter.

Further, **DETERING**, in the circuit of Fig. 5, does **not** include a low pass filter in the signal path having the divider 19. Rather, in contrast to this, **DETERING** discloses a **bandpass** filter 34 provided between the mixer 32 and amplifier 4 **in the transmit path.**

The Office Action points out that Fig. 6 of **DETERING** would, in the description, suggest such a low pass filter. More particularly, col. 5 of **DETERING**, lines, 53 - 56, state:

> If the operating conditions require it, another filter element (not illustrated) for suppressing the harmonics of the divided signal can also be used downstream of the divider 19.

However, Applicants' point out that this feature is **not** discussed in connection with **DETERING's** description of Fig. 5, but only in connection with Fig. 6 of **DETERING**. **DETERING** clearly states that Fig. 6 of **DETERING** is a "further development of the circuit according to the invention form Fig. 5". See, col. 5 of **DETERING**, lines 49 - 50.

However, Fig. 6 of **DETERING** is different with respect to Fig. 5 of **DETERING**, in that Fig. 6 refers to **a single-side band mixer or image reject mixer architecture, instead of mixer 32 of Fig. 5 and the subsequent bandpass filter 33 of Fig. 5.**

As such, Applicants' invention of claim 3 is believed to be even further patentable over the **FELDMAN** and **DETERING** references.

Additionally, Applicants' invention of claims 1 and 3 recite, among other limitations, "a circuit configuration for frequency conversion of an oscillator frequency into a carrier frequency". Clearly, the **DETERING** reference does not provide a carrier frequency at the output of the mixer 32 or the bandpass filter 33 of Fig. 5. Instead, as discussed above, **DETERING** provides a modulated signal to be transmitted over an antenna 5.

A person of ordinary skill in this art, starting with **FELDMAN**, would not consider using the relatively complicated and area consuming single sideband or image reject mixer architecture of the complete transmit path of Fig. 6 of **DETERING** to provide a carrier frequency. In the present invention, the carrier frequency is used to, in a different block, convert a baseband or intermediate frequency signal to the transmit frequency

level.

In view of the foregoing, a person of ordinary skill in the art would not combine elements of Fig. 6 of **DETERING** with elements of **FELDMAN**, because Fig. 6 of **DETERING** teaches a single side band or image reject mixer architecture, which can be conventionally used to process a modulated signal to be transmitted in **DETERING**, but would not be considered to process and provide a carrier frequency.

As such, Applicants' independent claims 1 and 3 are believed to be patentable over the **FELDMAN** and **DETERING** references, whether taken alone, or in combination.

The **STRONG** reference, cited in the Office Action in combination with **FELDMAN** and **DETERING**, against certain of Applicants' dependent claims, does not cure the above discussed deficiencies of **FELDMAN** and **DETERING**.

It is accordingly believed that none of the references, whether taken alone or in any combination, teach or suggest the features of claims 1 and 3. Claims 1 and 3 are, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claim 1.

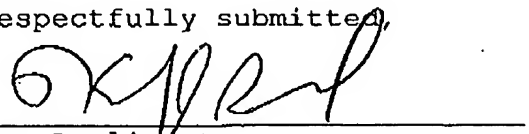
In view of the foregoing, reconsideration and allowance of claims 1 - 9 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made.

Please charge any fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner Greenberg Stemer LLP, No. 12-1099.

Respectfully submitted,



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